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## BOOK REVIEW

*Anpassungstheorie des Empfindungsvorganges.* By JULIUS PIKLER, Leipzig, Johann Ambrosius Barth, 1919.

1. *Hypothesenfreie Theorie der Gegenfarben.* 104 p.
2. *Theorie der Konsonanz und Dissonanz.* 34 p.

These two contributions to the study of visual and auditory theory clearly take root in a more comprehensive doctrine of sensory phenomena in general, which the author published in 1917 (*Sinnesphysiologische Untersuchungen*, Leipzig, 516 p.). It would seem that this latter doctrine has indelibly colored the University of Budapest professor's outlook upon data presented by the separate sense departments. The first part of the present monograph (published separately) treats of visual theory. Hering's views on this subject come in for the brunt of adverse criticism.

*Bk* and *W* are at opposite extremes of an uniform scale of brightnesses which passes through a central or normal point of middle grey. The somatic basis for the sensation of *Bk* is found in the complete absence of that process which conditions *W*, and the basis for greys in the varying degrees of partial absence of this process. The psychological antagonistic positivity of *Bk* derives from the representation in consciousness of a normal middle point in this process to which the organism has become *eingestellt*, and as a result of which deviations in either direction are perceived. The seeing of *Bk*, *W*, and greys, then, is conditioned by corrective adaptation processes with respect to the maintenance of an autonomous middle grey equilibrium. These adaptive corrections tend to raise or lower the point of equilibrium, from which in turn it follows that these same corrective processes in the direction of increase or decrease become greater or less,—whence the phenomena of simultaneous contrast. Positive after-images are due to the continuation of the adaptation process after cessation of stimulus; negative after-images to the excess of adaptation process after prolonged stimulation which is adequate to a new stimulus in the direction of greatest opposition to the previous sensation.

For the phenomena of color tone, Pikler elaborates and expands the above theory. In rough, his position is somewhat as follows: Colors distribute themselves along a scale in accordance with brightness values similar to the achromatic series. Each hue possesses a constant and "specific" tint. *B* is at the bottom of the brightness scale, *R* and *G* in the middle, and *Y* at the top. The following diagram represents the relation of the achromatic to the chromatic scale:

Black	Dark grey	Grey	Light grey	White
Blue	Red blue	Red	Red yellow	Yellow
	Green blue	Green	Green yellow	

The phenomena of color vision are explicable only in the light of their brightness components, since the somatic processes underlying

the latter are in reality the basis of the former as well. If this be true, then it is clear that *B* and *Y*, e. g., are antagonistic by virtue of their opposite location on the brightness scale. The same explanation given above for contrast, after-images, etc., is applicable to similar hue phenomena.

Part 2 is an extension of the author's general adaptation theory of sensation to the field of audition. Strangely enough, consonance and dissonance is the only subject treated!

The hearing of tonal intervals is fundamentally the perception of geometrical relations. We perceive in the octave the geometrical relation 1:2. The upper tone is the same as the lower, only doubled. This is explained in terms of the adaptation theory by the arousal of a sensation process by the lower tone of the octave, and a corrective adaptation sensation process just double in size by the higher tone. In the case of the fifth, we have the geometrical perception of the higher tone half double the lower, i. e., we perceive the ratio 1:  $1+1/2$ , not 2:3. With the major third the upper tone is perceived to be the same as the lower, only one-fourth doubled, i. e.,  $1:1+1/4$ , instead of 4:5. These intervals are the only ones characterized by sameness of components, whence derives their consonance. All other intervals are perceived arithmetically, and the component tones are heard unlike and dissonant.

It is rather difficult to escape the conviction that facts of audition have here been forced into an hypothesis by dint of uncritical analogy with space perception. Remarks Pikler, "Der Gedanke, dass es auf dem Tonhoehengebiete geometrische Verhaeltniswahrnehmungen gibt, ist, soweit ich sehe, bisher niemandem gekommen." How stupid psychology has been!

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